TOWARDS A NON-WALRASIAN MACROECONOMICS

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This article aims to contrast modern macroeconomic analysis with a non-Walrasian or evolutionary macroeconomics. This debate, which returns to the forefront with each major economic crisis, concerns the nature of coordination problems and the means of resolving them. While modern macroeconomic models describe the inter-temporal optimization behaviour of consumers who are perfectly adapted to their environment and cleared markets, evolutionary macroeconomics focuses on market imbalances that require adaptive behaviours. This contrast affects monetary and fiscal policy as well as the nature of any structural reforms to be carried out. It also affects the type of modelling to be developed.

Keywords: imperfect knowledge, short-term, equilibrium, flexibility, long-term, structural reforms, rigidity.

Neither classical macroeconomics, which is oriented towards the examination of supply conditions, nor Keynesian macroeconomics, which focuses on demand constraints, are able to shed light on the development of market economies that by their very nature are systematically confronted with structural shocks, whether this concerns technologies, preferences or even institutional and organizational forms. Dealing with this challenge requires taking seriously the role of time and understanding how the short-term and long-term are articulated, not in the sense that short-term events might be controlled by a long-term equilibrium identified with an attractor, but because there is no long-term path other than the one resulting from the way in which

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short-term imbalances are linked one after another. In other words, the debate is not between a demand economics and a supply economics, but between equilibrium macroeconomics and disequilibrium macroeconomics, and more broadly between a Walrasian-inspired general equilibrium theory (dynamic and stochastic), now the paradigm of contemporary macroeconomics, and an evolutionary macroeconomics.

This debate, which inevitably brings back to the surface with every major economic crisis, deals with the nature of the coordination problems encountered and how to respond to them. For economists in the Walrasian tradition, markets are systematically cleared through the price mechanism. This is true of the *tâtonnement* mechanism elaborated by Walras as well as the renegotiation mechanism introduced by Edgeworth. This is also true of the mechanism of rational expectations according to which the errors are not correlated over time and do not call for a revision of the agents' plans. This is true, finally, of the coordination on a bad equilibrium, in a world characterised by the existence of multiple equilibria, which is revealing of bad institutions. Contemporary macroeconomics belongs to this framework. The economy described is, by definition, always in equilibrium. In counterpoint to this tradition, an *evolutionary* macroeconomics, which we will call *non-Walrasian*, or which could also be called Marshallian, retains as a coordination failure, not coordination on a bad equilibrium, but market imbalances that call for sequential adjustments in prices and quantities.

The purpose of the following is to establish the fragments of this non-Walrasian macroeconomics by walking in the footsteps of Smith, Ricardo, Wicksell, Marshall and Keynes as Hicks (1933, 1947, 1956, 1973, 1974 , 1979, 1990) and Leijonhufvud (1968, 1990, 1992, 2000, 2006, 2008, 2009) did: these references highlight that the question is not whether one is orthodox or heterodox, or whether one intends to join one school of thought or another, but rather the need to identify the appropriate methods for dealing with a given subject, in this case the *viability* conditions of a market economy confronted with recurrent structural shocks.

1. The Paradigm of Contemporary Macroeconomics

Contemporary macroeconomics, in whichever version, is the product of two analytical ruptures and of a sort of reconciliation. The first of these ruptures is that introduced between the short term and

the long term, between fluctuations attributed to changes in demand and supply-driven growth, be it demographic supply or technological supply. The second of these ruptures is that which dissociates the rate of inflation resulting from fiscal and monetary drifts, for which the government is responsible, and the rate of unemployment whose natural or structural level reflects the degree of imperfection that affects the markets for goods as well as the labour market. The reconciliation consists in defining a long-term equilibrium, entirely determined by technologies, preferences and institutions, which is the unique attractor, meaning that any deviation is absorbed, if not immediately, at least in the short term.

A doctrinal corpus was thus formed that is common to economists of the new classical school and those of the new Keynesian school; both retain real business cycles as a benchmark and predict that getting closer to it can only improve the overall well-being. What is new analytically and methodologically stems from the fact that the equilibrium is no longer associated with a steady state, but takes the form of cycles impelled by successive productivity shocks, to which consumers maximizing their utility and endowed with rational expectations respond.

The reference is that of a dynamic and stochastic general equilibrium, the modern version of the general market equilibrium analysed by Walras, characterized by perfect information communicated by the price system, full competition, the neutrality of money and the absence of government. In these conditions it is no surprise that the rules enacted to achieve such an equilibrium involve making markets more flexible through structural reforms, ensuring monetary neutrality, setting up an independent central bank dedicated at targeting a near-zero inflation rate, ensuring that the public budgets are strictly balanced, and even cutting both public taxes and expenditures in order to disrupt as little as possible what is deemed to be an optimal allocation of resources resulting from private choices.

The debate on the scope of structural reforms is a perfect illustration of what currently unites and divides economists who share this same vision of economic dynamics. For some, structural reforms are efficient in both the short and long term. They believe that the prospect of future gains associated with these reforms will on its own lead to an increase in permanent income, encouraging households to consume more and firms to invest more, even if the implementation of these

reforms is likely to reduce current income. Others believe that, while these reforms are still considered as appropriate in the long term, the possible fall in demand in the short-term could have an impact on the potential growth rate due to the destruction they induce of physical and human capital. They consider, then, that measures to prevent a recession are necessary, which imply additional public spending and the acceptance of a temporary increase in public debt. These hysteresis effects can, however, only really be put forward if we abandon the hypothesis of rational expectations – in other words, if we recognize that knowledge is imperfect rather than sticking to an interplay of frictions leading to price rigidity.

According to this approach, money and finance are neutral in the long term if not even in the short term. The dichotomy between a real sector and a monetary sector is *de facto* maintained. Monetary and financial failures are not ignored. But they are the result of the inappropriate behaviour of a central bank that complies with the injunctions of impecunious governments or of commercial banks that wind up granting loans regardless of the solvency of the public and private borrowers. The solution therefore lies in imposing rules on a now independent central bank and in developing financial markets which are opportunistically said to be efficient in that they set asset prices that are consistent with fundamentals.

The essence of this analytic corpus is to describe an economy *out of time,* represented as a system self-regulated by market forces and subject only to frictions attributable to bad behaviours. Present and future decisions are *de facto* synchronized and fully coordinated with each other. An objective reality is presumed to pre-exist justifying the hypothesis of rational expectations.

2. The Foundations of a Disequilibrium Macroeconomics

Recent experience, in particular in a Europe experiencing mounting disorder, shows that the self-regulating mechanisms of the market can be blocked, due not to exogenous shocks, but to a sequence of imbalances that are in the very nature of capitalist market economies, without needing to point out market imperfections or deviant behaviour, but simply recognizing that knowledge is imperfect. The attempt to reconcile microeconomics and macroeconomics, in short, to unify macroeconomics, which is at the heart of analysis in terms of real

cycles, is still an objective, but on the condition of proceeding with a radical reversal of perspective. This implies considering that the short-term disequilibria affect the long-term profile of the economy, that growth is not independent of fluctuations, and that a real economy is always in disequilibrium due simply to ignorance about future change (Hicks, 1933). In fact, two very different characterizations of economic dynamics need to be distinguished in the literature (Day, 1993). In one, the behaviour of agents *adapted* to their environment is described by optimal strategies with regard to technologies and preferences and all the possible future consequences of their actions. In the other, the issue is how an economy works in which agents *adapt*, prices evolve and exchanges take place *out of equilibrium*.

According to the latter approach, inputs are dissociated from outputs and costs from proceeds. These distortions are transmitted over time, making the evolution of the economy depend on what happens step by step. Let us consider the case of a major innovation characterized by the fact that the construction cost of a new productive capacity exceeds the replacement cost of the existing one, more than counterbalanced, of course, by a reduction of its utilization cost and an increase of its efficiency (Hicks 1973). With given resources, the investment measured in units of productive capacity is reduced due to the increase in the unit construction cost. If wages are fixed, at the end of the construction period of the new productive capacity there will be a lower productive capacity in general, which will result in a fall of gross output and then in employment. This, we may recall, is the case of Ricardo's machinery effect, which shows how the unemployment resulting from technical progress is not due to the specific features of the new technology introduced, superior by definition, but to the economic conditions of the transition process from the old to the new technology. With flexible wages, and full employment, the increase in construction costs will nevertheless bring about a fall of gross output, associated now with a fall in labour productivity, which will no longer measure the efficiency of the technology but the difficulties of the transition.

True, in the specific analysis carried out by Hicks, an *ad hoc* hypothesis, that of *full performance* of the economy, allows a continuous matching of supply and demand and the convergence to a new equilibrium, with the consequence that unemployment is fully reabsorbed, thus reducing the traverse to a predetermined mechanical trajectory.

However, this shortcoming should not hide the thorough analytical advance that the Hicks model implies. As a matter of fact the question is not to know whether it provides an analytical framework able to deal properly with all the features of qualitative changes, but whether it deals properly with one essential dimension of change characterized by the phenomena of novelty and hysteresis. The crucial point, here, is that unemployment is not the consequence of the specific properties of the new technology, but rather a feature of the very process of change: as a matter of fact, the result of the sequential interaction between the decisions and constraints sketching out this process. The simplifying hypothesis adopted by Hicks, which amounts to make specific reference to a perfect barter economy, doesn't actually affect the basic structure of the model. The effects of a distortion of productive capacity on productivity and employment, brought to light with the model, emerge in all circumstances and not only in the case of a perfect barter economy.

The distortions introduced in the temporal structure of production coupled with the lack of perfect knowledge produce variations in the apparent productivity of labour and profitability, inflationary or deflationary pressures, deficits or surpluses in trade balances, and budget deficits or surpluses. These imbalances are not reducible to market failures or deviant behavior. They are in the nature of the processes of change. It is illusory, if not dangerous, to want to eradicate them *ab initio*. They are transitory phenomena that are as necessary as they are compelled. The *viability* of the paths followed by the economy requires containing them through appropriate *institutions* that cannot be reduced to intangible rules.

Because there is a time needed to build a production capacity, choices cannot be simultaneous as is assumed in dynamic, stochastic general equilibrium models. It happens, as Keynes pointed out, that a decision to save today is not the same as a decision to consume tomorrow. Taking stock of the time needed to invest in productive assets does not dispense with examining the conditions that make it possible to do this. Firms may not want or be able to do the inter-temporal trade of expected revenues from future output for the factor services needed to produce this output. Sometimes they cannot and do not want to finance productive investment. This inter-temporal failure of demand cannot be resolved simply by cutting interest rates (Leijonhufvud, 2008).

Industrial strategy and economic policy that obey *adaptive* behaviours and are decided *en route* set the path followed, without it being predetermined. Growth – stronger or weaker, steadier or more fluctuating – depends on it. The inflation rate and unemployment rate are joint products and therefore cannot be dissociated from one another, even if the relationship between them is not stable. Money and finance are not neutral, neither in the short nor long-term. There is no natural interest rate, no natural unemployment rate, and no potential growth rate that obeys strictly real forces, but rather variables that respond to the conditions of adjustment on markets in disequilibrium (Tobin, 1972, 1995).

The path is created by walking it. There is therefore no attractor, nor can there be any rational expectations. Private choices do, of course, react to economic policy choices, but the reverse is equally true. In short, the acquisition of knowledge, which remains imperfect, is the result of out-of-equilibrium interactions, taking place step by step, between economic agents as well as the institutions regulating their behaviour. The challenge for all decision-makers lies in mastering clocks, indeed in their ability to project themselves over a sufficiently lengthy time.

In this perspective, stocks may act as buffers between physical inflows and outflows, and between financial income and expenditure flows (Leijonhufvud 1973). In particular, stocks of liquid assets allow expenditures to be maintained when revenues fall off. Thus real world economies could be more robust than pure flow models would suggest. However, if disturbances are of an unexpectedly large magnitude, buffer stocks may be exhausted and a tight income constraint takes over.

Moreover, the role of real and financial stocks is ambivalent. On one hand, they may effectively act as buffers. On the other hand, they may reinforce the multiplier effect. Debts may act as buffers as well as amplify demand constraints. Thus, deflation increases the real value of existing debt, and the price effects may themselves be deviation amplifying. An increasing indebtedness of households, which may hide, for a while, the effects on output of large displacements of potential demand, will end by affecting current spending, when it appears that these households are insolvent.

Clearly, given technologies and/or preferences cannot univocally determine production and consumption paths, and hence the evolu-

tion of the economy, as standard economic models purport. Because of ignorance of future changes in technologies and preferences and still more of the consequences of these changes, a long-term equilibrium is never attainable (Hicks 1933 p. 32).

3. Price Flexibility in Question

To deal with change in this way, by emphasizing the coordination failures and the means of dealing with them, inevitably leads to questioning the effects of a greater or lesser degree of price and wage flexibility. Variations in each of these play a role in medium-term developments in the economy due to the associated changes in income, and they dominate the course of events (Solow, 2000). Doing away with the principle of total flexibility, which would make prices instantly be equilibrium prices, rendering pointless any reflection about a coordination that is supposedly instantaneously achieved, raises the issue of the impact of the degree of price flexibility on the way the imbalances develop. It is commonly accepted that, by increasing the debt burden, a general fall in prices increases supply surpluses rather than reducing them. Leaving aside this deflationary situation, the discussion is still open. There is, nevertheless, a presumption that prices that are too brutally and excessively flexible are damaging. Marshall was fully aware of this when he insisted on the impact of adjustment speeds on market dynamics, emphasizing the possibility of chaotic fluctuations in the case of flexibility in prices and quantities, thereby making a case for short-term fixed prices in order to avoid this chaos (Leijonhufvud, 1994).

There are several dimensions to the problem. Excessive price changes are likely to create greater uncertainty, which affects the value of corporate assets, exacerbating fluctuations in overall output through the effects on production, hiring and investment decisions (Stiglitz, 1999).

Price variations, when they go in the wrong direction and become excessive, can contribute to amplifying disturbances that affect the structure of production capacity. They lead to alternating between the excessive destruction of capacity and bottlenecks, inevitably causing erratic fluctuations in output and consequently a fall in the growth rate (Amendola and Gaffard, 1988, 1998, 2006).

Price volatility reveals the inability of agents to make a reliable economic calculation, which leads them to react instantaneously to current events and to shelve investment plans made in the past. The

shortening of their time horizons and price volatility interact to destroy production capacity (Heymann and Leijonhufvud, 1996; Leijonhufvud, 1997).

In these circumstances, the criticism aimed at analyses that recognize the existence of imbalanced markets, i.e. that they violate the assumption of individual rationality by denying that agents are capable of exploiting the gains in exchanges, does not hold. Relative price rigidity comes from rational behaviour insofar as it is a factor of *viability* of an economy facing structural changes amidst an uncertain future.

The question of the impact of more or less price flexibility in a context of market imbalances and agent heterogeneity sheds light on the true costs of inflation (Heymann and Leijonhufvud, 1996; Leijonhufvud, 1977, 1997). These costs result from the disorder created, beyond a certain threshold, in relative prices, in the distribution of income and wealth, and in the temporal structure of production capacity, by resulting in preventing market mechanisms from functioning properly. The real problem that agents face is not that they take a change in the general level of prices for a change in relative prices, but that they are unable to correctly interpret the price signals that result from relative price changes due to the inflationary process. As a result, the necessary reallocations of resources are not made, while others are made that should not be. While excessively low inflation is costly in terms of lost jobs, which also makes the necessary structural adaptations more difficult, high inflation goes hand in hand with a shortening of the time horizon, a decline in investment and destruction that threatens the viability of the economy (Georgescu-Roegen, 1968). While sticky prices provide an anchor that helps stabilize the economy, excessively flexible and erratic prices lead to destroying inter-temporal stability, possibly creating the conditions for high inflation (Heymann and Leijonhufvud, 1996; Leijonhufvud, 1997).

What is true of the prices of goods holds just as much for wages. Wages are, if not rigid, then at least sticky, since employers are reluctant to raise wages too much because of a shortage of labour for fear of disrupting the established differentials, and they are just as reluctant to lower wages due to unemployment for fear of alienating those they employ. This rigidity is not a matter of a monetary illusion, it is a question of continuity as well as equity (Hicks, 1975). If excessive wage flexibility occurs, it could be the signal that behaviour is dominating that breaks up continuity, disrupts economic calculations and reduces the time horizon of economic agents to the detriment of growth.

4. Monetary Policy: Rules Versus Discretionary Choices

Out of equilibrium, it is difficult to maintain the proposition that monetary policy must be dedicated exclusively to maintaining stable prices, for two reasons: there is no evidence that it is necessary to systematically thwart inflationary pressures; and it may be necessary to conduct monetary policy with the aim of counteracting the risk of global instability. This affects the rules that must be applied.

When monetary policy responds to real shocks whose adverse effects are not countered by price flexibility, simply because the optimal prices are not known and because a high price flexibility is no guarantee of discovering them, fighting against any inflationary drift will not be sufficient to restore growth. On the contrary, inflationary pressures, in this case transitory, must be accepted in order to re-establish a quasi-steady state when the required investment results in a distribution of purchasing power without an immediate counterpart in terms of the supply of consumer goods. The reason is that building new production capacity *takes time*. This is the case in an economy undergoing reconstruction (Hicks, 1947), but also in an economy facing a technological shock that results in creative destruction. Combating these pressures systematically would simply wind up penalizing investment and preventing the transition from being successful (Amendola and Gaffard, 1998, 2006). A decision about how to weight the objectives of price and growth is not trivial. Price stability today does not guarantee growth tomorrow. There is no stable relationship between inflation and unemployment, due to structural disruptions, including variations in the resulting dispersion of net excess demand in different sectors (Tobin, 1972, 1995).

In these circumstances, monetary rules should not be rigid. Rules and discretionary choice must be combined. The credit system must be managed by a central bank whose operations need to be determined on the basis of an expediency judgment. Some *accommodation* of monetary policy in response to real cyclical growth is appropriate, although there is no simple criterion for knowing the exact dose of accommodation needed (Leijonhufvud, 1990). In a context of structural change, the adoption of rigid rules, supposedly in order to optimize under the false presumption that errors of perception concerning the natural interest rate or the potential growth rate are small, proves to be costly in terms of inflation and unemployment (Orphanides and Williams, 2002). The best strategy, then, is to make

adjustments to changes in the rate of inflation and to the level of activity, implying a certain degree of *inertia*. Inertia has a simple justification: raising the interest rate sharply to counteract inflationary pressures will undermine investment and may lead to a shortfall in future capacity, i.e. future inflationary pressures that can be anticipated. Keeping the interest rate too low due solely to the absence of inflationary pressures, despite a low unemployment rate, can lead to an excess investment in productive assets, and also an excess investment in financial and real estate assets. Thus, the quantitative easing policy enacted recently with a view to stimulating activity and returning to a positive inflation rate in order to escape the constraints of a zero interest rate has had the main if not sole effect of promoting the purchase of existing financial assets, at the risk of provoking a new financial crisis.

In fact, the problem goes beyond monetary policy that is defined without the need to refer to the behaviour of financial and non-financial actors to include the organization of the banks and the functioning of the financial markets. It is, of course, important to strengthen micro and macro-prudential measures, and equally so to ensure that firms benefit from patient capital.

To understand this, it must be remembered that liquidity is a complex notion, in the sense that it is not reducible to holding money or readily negotiable assets (Hicks, 1974). There are actually three types of financial assets: current assets, reserve assets and speculative assets. The first are essentially complementary to the real assets required to produce and therefore cannot be considered liquid. The second type, which refers to the ability to raise funds on the markets or to borrow from banks, is the liquidity required to pursue an investment activity with a long-term involvement. The third type are held for immediate gain and are not directly related to production and investment activity. This distinction, which is probably difficult to establish empirically with respect to the last two categories, is significant as to the meaning imparted to liquidity, in that it reflects a *sequence* of choices and not a one-off choice. The function of liquidity is to preserve a capacity for choice in the future, knowing that all investments are not equivalent, depending on whether or not they correspond to future demand.

Nevertheless, there is a dilemma. On the one hand, liquidity is a matter of a sequence of choices because market information is not immediately available whereas investments in real assets are irreversible,

which would imply delaying investment decisions in case of too much uncertainty, the social function of liquidity being that it gives time to think. But, on the other hand, learning is the result, not of the passing of time, but of a firm commitment, implying that finance commitment is a necessary condition for the other stakeholders to embark on an innovation process. Given that any investment has a gestation time that is longer as the expected productivity gains are higher, and that, in addition, successive investments are complementary to one another, which explains the weak influence of interest rate changes on the current investment rate (Hicks, 1989), firms must be able to benefit from a long financial commitment, i.e. from *patient capital*, whether this is provided by banks or by shareholders (Mayer, 2013). As a matter of fact, "there must usually be a practical distinction between 'inside' shareholders, who feel themselves to be closely associated with the company, so that (like established labour) they expect to go on holding for considerable periods, and the fleeting population of shareholders who are loosely attached. All shareholders alike will have to be paid the dividend, but while the outsiders are concerned with no more than the current dividend and with the market value of the shares, the insiders are concerned with the future of the company, and so with the dividends they expect, on their own information, to receive at future dates" (Hicks, 1989, pp. 87-88). Therefore, monetary analysis should focus on the coordination needed to make a credible commitment in irreversible investments, and monetary policy should aim at influencing investment decisions of this type rather than only targeting the inflation rate. Its effectiveness depends on its ability to affect the liquidity of firms and banks. The inefficiency of monetary policy is due not to the fact that the interest rate is at bottom but to the behaviour of the banks and, more generally, to the organization of the financial system whenever it prioritizes a rapid return on investment (Stiglitz, 2017).

5. Fiscal Policy: Rules Versus Discretionary Choices

In the world of dynamic stochastic general equilibrium models, if expected inflation exceeds the set target, the central bank sharply and abruptly raises its interest rate to quickly bring the inflation rate back to the required level. In such a world, the government should only reluctantly pursue an expansionary fiscal policy, as it will anticipate that any increase in aggregate demand driven by rising government spending will be offset by an equivalent reduction due to central bank action

when the latter is independent and applies the rule laid down. Moreover, when monetary policy is tight and fiscal policy lax, the lack of monetary financing of the public deficit causes the public debt to rise. There comes a time when fiscal solvency is no longer assured. Unless the deficit is cut drastically, there is no alternative to monetizing the debt and, therefore, to high inflationary pressures (Sargent and Wallace, 1981). To escape this unpleasant arithmetic would simply require imposing a fiscal rule.

This arithmetic is, however, belied when it comes to a sequence of events *out of equilibrium* that is induced by the formation of distortions in the temporal structure of production capacity. Imbalances follow one after the other and can be amplified, resorbed or offset. Thus, excess supply and unemployment can be followed by excess demand and inflationary pressures. Therefore, increasing public spending today and correspondingly increasing public debt will reduce the excess supply and current unemployment, while taxing income later will reduce, also later, excess demand and inflationary pressures. In this case, the increase in public debt does not reduce current consumption, while the subsequent repayment of this debt will reduce future consumption to the benefit of the economy over the period as a whole. The *temporal* dimension of Keynesian policy is related here to the poor *temporal* distribution of excess demand that is left unadjusted by intertemporal price adjustments (Leijonhufvud 1992). Needless to say, the Ricardian equivalence between borrowing and tax – meaning that fiscal policy is ineffective – does not hold. Out of equilibrium, no action is neutral. Only an active policy is likely to maintain the economy's stability. When a budget deficit follows a rise in private savings and a downturn in activity, the real question is how long must a budget deficit be accepted and what should be its amount before public spending can be boosted by private spending. The challenge is to maintain or re-establish a relative balance between supply and demand at each moment and over time.

When a restrictive monetary policy constrains investment, as was the case in Europe in the 1990s, it is the pattern of the fluctuations that is changed. The recurring shortfall in investment has the effect, cycle after cycle, of reducing the rate of growth compatible with price stability and of pushing up the unemployment rate that doesn't accelerate inflation, which some people call the equilibrium unemployment rate, as lower investment *today* means a lower level of output

tomorrow, and hence reaching the inflationary barrier faster. Simultaneously imposing a constraint on the budget deficit maintains and aggravates the fluctuations. It leads to a fall in public spending during a recession, accentuating the slowdown and helping to reduce the duration of the subsequent recovery phase by undermining public investment. It leaves the door open to the possibility of lowering taxes without a corresponding decline in public spending during boom periods, creating inflationary pressures that can in turn lead to a tightening of monetary policy and a premature turnaround in the economy. No effective constraint is introduced in the expansionary phases of the cycle, but the recessions are amplified, which cannot be interpreted as deviations from a predetermined trend, but rather as a phase of an essentially endogenous development that the budget constraint helps to shape. The rules, which are supposed to avoid the unpleasant arithmetic described by Sargent and Wallace (1981), plunge the economy into a highly unpleasant series of imbalances.

When, as happened in the United States in the 2000s, the inflation rate is contained despite rising household indebtedness, in view of the rule, there is no need to raise the interest rate nor worry about lowering it. The strict application of the monetary rule did not, however, prevent the budget deficit from widening. Faith in the virtues of the rule and misjudging the true causes of price changes masked the unsustainable nature of private debt and prevented anticipating the outbreak of the financial crisis, which ultimately led to a further increase in the budget deficit.

When the budget deficit and the public debt have increased as a result of a fall in activity, and if, as was the case with the sovereign debt crisis in the euro area, it is impossible for the central bank to intervene as lender of last resort, the financial markets become the masters of the game and impose a rise in interest rates, in this case highly differentiated interest rates. It is these markets, and not the central bank, that, via the interest rate, enforce a form of fiscal discipline. This arithmetic is very likely to cause a further downturn in activity and a further widening of the budget deficit.

In all these situations, the unpleasant arithmetic of equilibrium gives way to the no less unpleasant dynamics of disequilibrium, which calls for a policy mix that takes into account the role of *time* in the face of the adjustments necessitated by structural shocks. This means that both inflationary pressures and budget deficits must be accepted

temporarily when they are a clear factor involved in the coordination of economies that are naturally in disequilibrium.

The impact of a fiscal stimulus is of course highly dependent on the state in which an economy is found. In a depressed economy, characterized by massive unemployment and excess capacity in all its sectors, which is what Keynes referred to, a decision by producers to hire and to raise wages would create a solvent demand to which producers would respond instantly. Nevertheless, coordination between aggregate supply and demand requires public intervention in the form of allowances paid to the unemployed or hiring for public works. A signal is thus sent to firms that a solvent demand exists. The multiplier effect on income and employment is then necessarily high because of the match between available capacity and the increased demand thus obtained.

The same does not hold in the case of a recessionary economy for several reasons. In general, the supply structure is not in harmony with the demand structure, and efforts to stimulate demand are usually hampered by bottlenecks resulting from a lack of available production capacity, including due to a lack of the required workforce skills. Second, an increase in demand leads firms to raise the utilization rate of their production capacity but not necessarily their investments, either because they are excessively indebted or because they do not have sufficient information on the nature and volume of future demand. This leads them to adopt a wait-and-see position, as they prefer to maintain liquidity by keeping their reserve assets or preserving their capacity to take on debt, with the aim of better identifying the type of investment to be made. The initially higher multiplier effect of public spending is, in all cases, reduced. Fiscal policy must be part of a policy mix that includes monetary policy, but also, as mentioned above, the organization of the financing system and, undoubtedly, the organization of the markets, with the objective of extending the time horizon of the firms.

6. Revisiting Structural Reforms

Structural reforms refer to a certain idea about what the microeconomic foundations of macroeconomics should be, in this case perfectly flexible markets that guarantee being on the best trajectory. However, far from leading to an increase in productivity, they can constitute real obstacles to innovation by generating forms of *dualism*. It is difficult, in

fact, to stick to the identification of configurations of the economy that are possible in the long term without having to worry about the chain of events that may occur as a consequence of structural reforms or simply as the already proven consequence of flexible markets. While it is possible to imagine rational behaviour guided by expectations of permanent income in the absence of the destruction of resources, this same hypothesis becomes untenable once economic agents are confronted, not only with a fall in their remuneration, but also with a narrowing of their time horizon due to such destruction and to the resulting hysteresis effects.

The destruction of jobs in declining activities requires that the employees concerned be mobile occupationally and geographically. Reducing job protection and lowering wages in these activities so as to encourage mobility is not a solution. Everything depends on what happens to the labour resources.

In fact, the resources released, far from being directed to higher-paying, high-tech activities, could well be compelled to move to activities where the jobs on offer are low-skilled, sometimes part-time and often precarious. This explains, moreover, why a situation of almost full employment does not go hand in hand with inflationary pressures, as can be seen currently in the United States.

The fall in the wages of workers made redundant in troubled industrial sectors and hired on precarious contracts in low-productivity protected sectors leads to the impoverishment of a large part of the population, which will result in a fall in domestic demand. This can be thwarted only by granting consumer loans to these impoverished households, which is not without risk if a lack of solvency were to push the economy into a crisis, as happened in the United States in 2008.

This form of reconversion, and the attendant fall in wages, also affect the accumulation of human capital and, consequently, potential growth. In the face of financial constraints, the workers will have neither the time nor the financial means to train themselves, even if they are encouraged to do so by the wage differential with skilled workers, especially since the credit market is imperfect and it is not possible for them to take out a loan against their future income.

The *dualism* that sets in, being synonymous with deepening inequalities and the decline of the middle class, affects the structure of demand. The wealthiest households buy luxury goods manufactured in small volumes, sometimes abroad, or use their abundant savings for

the purchase of existing financial and real estate assets. The poorest households turn away from domestic products and buy low-cost products made in low-wage countries. A form of deindustrialization takes place, which has the effect of reducing productivity gains, export capacity and the potential growth rate, unless the strategy set out by business and approved by the government leads to capturing external markets and to rooting growth in the export of industrial goods, as happened in the case of Germany.

In short, the clearest result of labour market flexibility may be a *polarization* between high-skilled, high-wage jobs and unskilled, low-paid jobs, with a fall in median wages. This would then look much like an internal devaluation, more appropriately called wage deflation, which is actually aimed at boosting the market shares of domestic firms in the hope that growth will be driven by exports.

It is not labour market rigidities that are directing investment and technological decisions in such a way that these investments have a negative effect on productivity and growth, but rather the development of dualism in the labour market accompanied by a fall in the median wage, which affects the structure of the economy and its capacity for medium-term growth. This is undoubtedly the reason why, in the most recent period, productivity gains were as weak in the United States as in the euro zone countries, despite significant differences in terms of job protection, the intensity of competition in the goods and services markets, the weight of the public sector, taxation and the innovation effort.

This observation invites us to reconsider what might be the microeconomic foundations of macroeconomics. The *commitment* of the owners of capital to engage in long-term investment is a necessary but not sufficient condition for other stakeholders in the company – employees, suppliers and customers – to commit in turn. These different actors also need to benefit from mutual guarantees of their commitment. These guarantees are obtained through the conclusion of agreements that establish long-term relations, in the form of lengthy contracts (employment contracts, sub-contracting agreements, and distribution contracts) that structure industrial organization (Richardson, 1990). The search for immediate responsiveness to the current signals, which is hidden behind the current idea of flexibility, gives place here to an entrepreneurship dedicated to the creation of value rather than its diversion, a capacity at the heart of the process of competition through innovation.

7. Conclusion

With the stochastic dynamic general equilibrium model, anything can happen. This does not mean that we know why an event has happened, nor that we can conclude that it is the result of intertemporal optimization behaviour. This modelling makes it possible to introduce all the *ad hoc* elements that one wants, whether this means different types of shocks (of supply and demand) or frictions (consumption habits, cost of adjustment of the capital stock), making it difficult to understand the sequence of events (Stiglitz, 2017) – but not without concluding that there is ultimately a final cause of what has happened, in this case market failures, understood as a lack of flexibility, implying that economic policy should be conducted in such a way as to correct these. The economy jumps instantly from one equilibrium to another, with no consideration of the dynamics engendered by the unexpected formation of real or financial stocks. Future markets are eventually considered, but without imagining that crises can make these disappear rather than creating them (Heymann and Leijonhufvud, 1996). No temporal dependence phenomenon is considered, even when Markov processes are introduced according to which, if the present state makes it possible to predict the future state, the prediction is not improved by knowledge of past information.

In fact, in this type of model, *constant laws* govern the relations between events, which winds up with the economic agents being known, and corresponds to what Hicks (1979) calls *contemporary* causality. Nothing is said about the opportunity or the possibility of answering in one way or another to the signals emitted. The reference period is an accounting period that is, by definition, completely arbitrary and whose duration has no influence on the final result.

The *sequential* causality that Hicks (1979) opposes to contemporary causality negates the existence of such constant laws. It means that multiple and varied evolutions are possible, conditioned by the variety of eligible choices taken *en route*. Decisions appear for what they are, that is, choices constrained by the heritage of the past (embodied in real and financial stocks) and creators of future constraints or, if you prefer, they are milestones along the causal chain. They call for an appreciation of the opportunity and possibility of the choices involved at each stage. Time periods become decisive in the course of evolution: the time that elapses between the signal (coming from the market or the authorities) and the decision-making; and the time that elapses

between the latter and its realization. These time periods can be quite variable. The reaction to the signal can be fast or slow. The same is true of the actual implementation of the decision taken. An increase in income does not necessarily result in an increase in consumption, both because consumers can wait to know more about the signal sent and because the goods they intend to demand are not immediately available. An increase in costs does not lead to an increase in prices, because entrepreneurs wait to find out what their competitors will do, or because they might be bound by medium-term contracts with their customers, or because they prefer to cut their margins. Holding stocks of assets, including liquidity, and access to credit are factors that influence the length of these time periods and, consequently, expectations that become essentially endogenous.

The evolutionary economic analysis thus conceived should be ordered in two parts: a theory of the elementary period, which must be completed by a theory of the continuation, which is concerned with the effects produced by the events of the earlier periods on the plans and expectations that determine the events of subsequent periods (Hicks, 1956, 1990).

The difficulty with such a dynamic analysis method stems from the fact that disequilibrium forces are much less reliable than equilibrium forces. Multiple paths can be taken with configurations that are the fruit of the sequence of disequilibria, in the centre of which are the stocks that are the expression and the vector of propagation. The path that will actually be taken is due not only to the animal spirits of the decision makers, but also and mainly to the role of institutions. However diverse these may be, they must have a major objective: to constrain the paths followed, to smooth out fluctuations by recognizing the need for certain forms of *rigidity* or *inertia,* with the aim of allowing the various actors to cope with the combined interplay of uncertainty and irreversibility and to be projected over a sufficiently long time.

The analytical approach thus sketched out is characterized as non-Walrasian in order to clearly indicate that it ruptures with models that persist in the description of equilibria, even if they are multiple, with their claim to novelty based on insisting on the complexity of relations, the multiplicity of agents and the shocks they suffer, and the asymmetries or incompleteness of information, but without recognizing the sequential dimension of economic processes and the *time dependence* of events rooted in real and monetary phenomena.

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